

## Waste tires used as fuel in cement plant

Located near Humboldt in southeastern Kansas, Monarch Cement Company heats and mixes different rocks and other ingredients to produce 780,000 tons of “clinker” each year. “Clinker” is a chunky, rock-like mixture that is ground up to make cement powder. When cement is mixed with sand, gravel, and water and allowed to dry, it turns into concrete, which is used to build roads, bridges, buildings, homes, patios, and even basketball courts and skate ramps!

At Monarch, clinker is created in two kilns, which are like big ovens. The kilns are 12 feet in diameter and 165 feet long. Think of all the cookies you could bake in there! However, it takes a lot more heat to make clinker than it does to make cookies. To bake a batch of chocolate chip cookies, you probably set your oven for 350 degrees Fahrenheit. To make clinker,



Monarch's furnaces need to reach at least 2800 degrees Fahrenheit.

Obviously, getting an oven up to 2800 degrees takes a lot of fuel—and that's where the tires come in. Before 1990, Monarch used only “fossil fuels” to run its furnaces. Fossil fuels include coal, oil, and natural gas. These fuels contain carbon, which when burned gives off large amounts of heat. Tires are made up of about 80 percent carbon, so they can be used in the kilns as fuel, reducing the need for fossil fuels that must be mined or drilled from the earth. Today, as much as 13 percent of Monarch's fuel comes from used tires. They burn about 2,000 tires each day, meaning that a tire goes into the kiln about every 45 seconds, around the clock!

As a source of fuel, waste tires are in good supply. Each year in Kansas, about 2.7 million tires wear out. If old tires are left out in the weather, water can collect in the cool, dark space inside the tires. As the water becomes stagnant, mosquitoes move in and breed. These mosquitoes may carry germs that can make people and animals sick. Also, if scrap tire piles start on fire, the tires will burn for a long time and produce oily waste that could contaminate soil and water. These fires can put

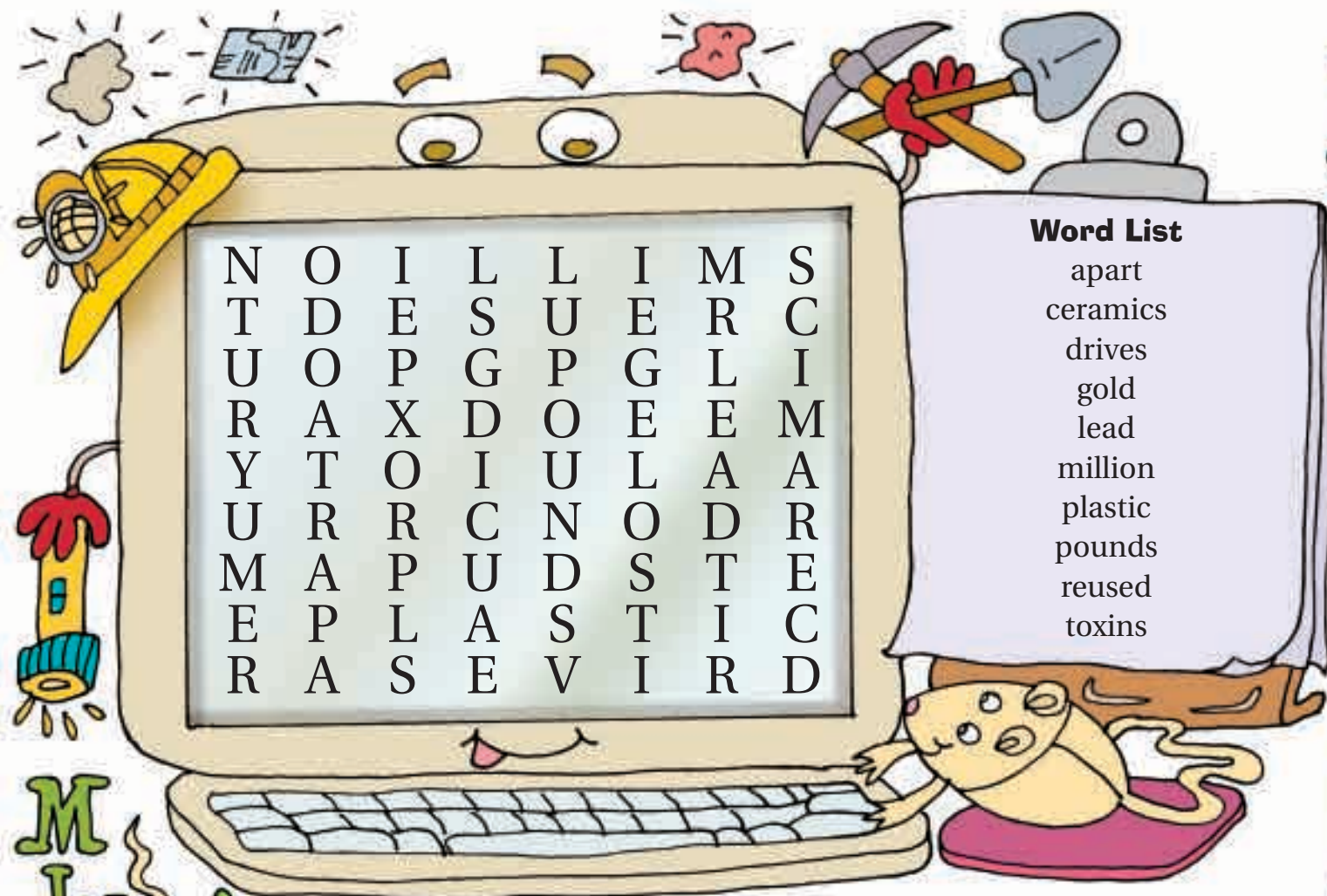


neighbors and buildings at risk.

When tires are burned as fuel, as they are at Monarch Cement, we don't call it recycling. Recycling is when a product is turned into a new product. For example, when tires are shredded and used under playground equipment, we call that recycling. Using tires as fuel is another kind of “recovery,” because the energy stored in the tires doesn't go to waste. Recovery is also good because it means we use fewer fossil fuels and preserve the ones we have, making them last longer.

The next time you play basketball, go skating, or enjoy a walk on a sidewalk, think of tires. Who knows, maybe the old tires from your family's car or truck became the fuel that helped make the clinker that made the cement that made the concrete you're enjoying.





MINING  
YOUR  
COMPUTER  
RESOURCES

Word List

apart  
ceramics  
drives  
gold  
lead  
million  
plastic  
pounds  
reused  
toxins

N O I L L I M S  
T D E S U E R C  
U O P G P G L I  
R A X D O E E M  
Y T O I U L A A  
U R R C N O D R  
M A P U D S T E  
E P L A S T I C  
R A S E V I R D

Read each sentence. Search for the missing word in the word search puzzle. You might find words backward, forward, up, down, or at an angle. Cross out the word in the puzzle and write it on the correct line.

1. If computers are disposed improperly, they can release toxins into the environment.
2. Computers contain small quantities of precious metals, such as \_\_\_\_\_.
3. The computer's case is made of \_\_\_\_\_.
4. On average, an obsolete personal computer weighs about 70 \_\_\_\_\_.
5. In addition to metals and plastics, computer circuit boards also contain heat-resistant and breakable \_\_\_\_\_.
6. Some computers still work and should be \_\_\_\_\_.
7. When a computer is taken \_\_\_\_\_ for recycling, we call the process "disassembly."
8. Last year, about 55.4 \_\_\_\_\_ personal computers became obsolete and were taken out of service by their original owners.
9. A standard computer monitor contains \_\_\_\_\_ to protect users from radiation.
10. The computer's central processing unit usually contains CD, floppy, and hard \_\_\_\_\_.

Now, write the letters that you did not cross out. Go in order across and then from top to bottom. You'll discover a secret message about electronics.

Before you replace old equipment and buy new equipment, consider this:



TAKE  
YOUR  
TIME!

Find the start time. Then match the people with the start time to identify the activity.

1. Mike and Ashley's activity took 1 hour and 10 minutes. They stopped at 2:00.

They started at \_\_\_\_\_ (time)

Mike and Ashley \_\_\_\_\_ (activity)

2. Latoya's activity took 45 minutes. She stopped at 10:30.

She started at \_\_\_\_\_

Latoya \_\_\_\_\_

3. Devon's activity took 20 minutes. He stopped at 3:05.

He started at \_\_\_\_\_

Devon \_\_\_\_\_

4. Mr. Jackson's activity took 2 hours and 25 minutes. He stopped at 1:30.

He started at \_\_\_\_\_

Mr. Jackson \_\_\_\_\_

5. Mickey's activity took 1 hour and 45 minutes. He stopped at 1:20.

He started at \_\_\_\_\_

Mickey \_\_\_\_\_

Start time

Activity

9:45

covered the bulletin boards with old sheets.

11:05

collected and organized the student's textbooks for summer storage.

11:35

cleaned the art cabinet and tightly sealed all the paint jars.

12:50

scoured the backs and seats of the classroom chairs.

2:45

readied the gerbils for their new summer home.

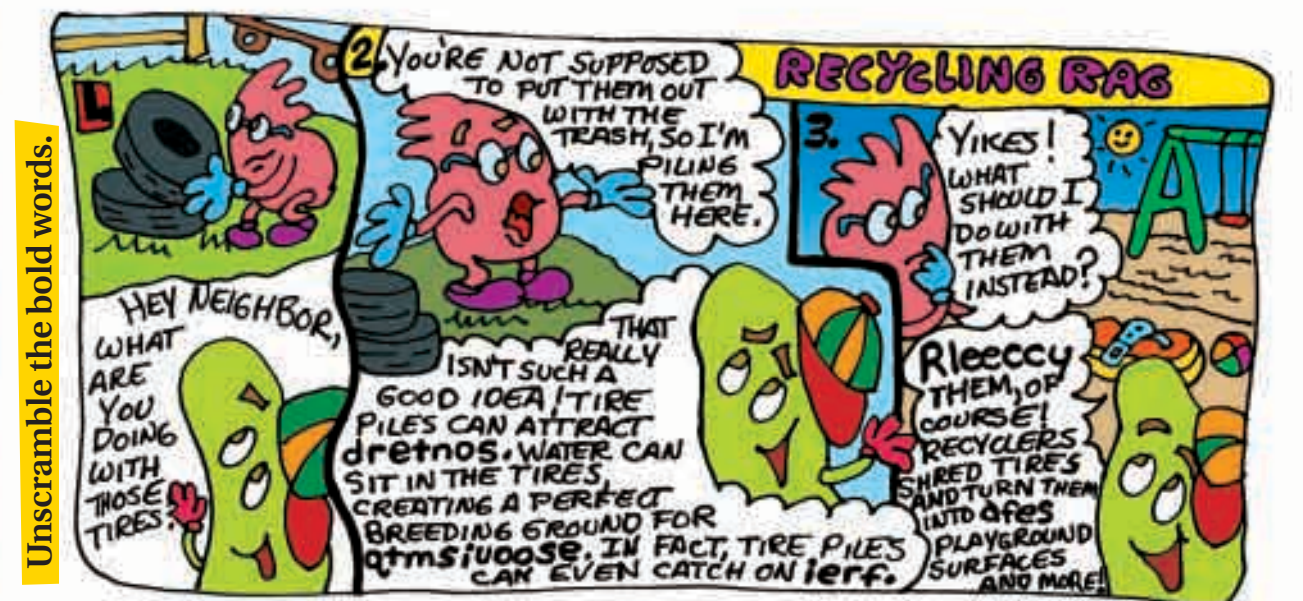


The Maloney's home burned to the ground last weekend. All the neighbors are donating household items for the new home that the Maloneys will be moving into next week. Bill's Car and Truck Dealership will send a truck to collect all the items next Saturday. Help the driver locate the places where he can collect the donations.



Write the grid location for each of these places:

1. Valley Road D3, D4
2. Lupine Lane \_\_\_\_\_
3. Boyle Boulevard \_\_\_\_\_
4. Mountain Ridge Highway \_\_\_\_\_
5. Lorraine Road \_\_\_\_\_
6. Third Avenue \_\_\_\_\_
7. Dooley Way \_\_\_\_\_
8. Glendale Circle \_\_\_\_\_
9. Oak Ridge Lane \_\_\_\_\_
10. South Fork Street \_\_\_\_\_
11. Meridian Lane \_\_\_\_\_
12. Palm Court \_\_\_\_\_
13. Ash Street \_\_\_\_\_
14. Northview Drive \_\_\_\_\_
15. Twin Oaks Drive \_\_\_\_\_
16. Broadway Avenue \_\_\_\_\_



Unscramble the bold words.





Grass clippings can provide nitrogen, a food that your lawn needs. In fact, clippings can provide about 25 percent of the fertilizer (plant food) that your lawn needs each year!

Letting clippings drop back onto the lawn when you mow is called “grasscycling” or “mulching.” If your family has a mulching mower, the mower will chop the grass blades into tiny pieces. If you don’t, simply remove the bag from your mower and insert the “chute cover,” a safety device that covers the hole where the bag is normally attached. The pieces will not be chopped as small as with a mulching mower, but as long as you mow often this still works just fine.

No matter what kind of mower you use, the key to grasscycling is “trimming.” Each time you mow, you should trim only the top one-third of the grass blades off your lawn. If the grass is growing quickly, you may have to mow more than once a week. However, the small clippings will quickly begin to rot before the next mowing. Chopping off more than one-third is hard on the grass plants—and leaves behind long clippings that take longer to break down.

If you bag sometimes, you still don’t have to put grass clippings to waste. You can empty your clippings around garden plants or in flower beds as a mulch. This mulch will



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help the soil keep its moisture, especially during our dry summers, and will also keep the weeds down.

Grass clippings can also be a great ingredient in your family’s backyard compost pile where plant material is changed into soil. Grass clippings are a perfect “green” ingredient in compost. To create a rich, soil-like compost, your pile needs dry, “brown” materials like dried leaves and dead plants, as well as fresh “green” materials, such as grass clippings or vegetable peelings.

In some communities, such as Lawrence or Winfield, grass clippings and other yard waste are picked up at the curb and taken to a city composting facility. Your parents can call your city or county trash department to find out what to do with yard waste where you live.

## Greener school cleanups

Can you believe it? Summer vacation is just around the corner. You’re probably already counting down the days.



Before school ends, you’ll have to clean out your desk and help get the classroom ready for summer and next year’s students. When that day arrives, remember waste reduction. Here are some tips for a greener school cleanup:

- Separate paper. Notebooks with unused paper can be saved for next year. Paper with a blank back can be reused as note paper during the summer. Paper that has been used on both sides can be saved, wadded up, and used to pad packages that you ship.
- Put reusable binders, pencils, pens, rulers, erasers, markers, and other supplies in a special box. Mark the box “School Supplies.” Before you head to the store for new school supplies next fall, pull out your box and “shop” at home.
- Clean your desk without using toxic chemicals. Use soap (such as dishwashing liquid), water, and rags. You might have to rub hard to get all of the pencil and eraser marks off.
- Sort recyclables, such as aluminum cans, soft drink bottles, and some paper items, and keep them separate from trash.
- Empty your backpack. Use a vacuum cleaner and rag to clean out the inside. Then, hang the bag up for use during the summer or next fall.

